AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS

1. (Previously Presented) In a communication system, apparatus for changing the bandwidth of a circuit switched connection without taking down the connection comprising:

a network management system arranged to issue a connection create request effective during a first time period and a connection modify command effective during a second time period;

a first switching circuit comprising a first interface and a second interface, said first switching circuit included in a SONET communication network having at least three switching circuits, the first switching circuit being arranged to

receive data at the first interface,

be responsive to the connection create request during the first time period to reserve first resources at a first bandwidth for transmitting the data between the first and second interfaces at the first bandwidth and to launch a first path setup message using a signaling protocol, and

be responsive to the modify command during the second time period to reserve virtually concatenated second resources at a second bandwidth greater than

the first bandwidth for transmitting the data between the first and second interfaces at the second bandwidth and to launch a second path setup message using the signaling protocol;

a second switching circuit comprising a third interface and a fourth interface, the second switching circuit being arranged to

receive the data at the third interface,

be responsive to the first path setup message during the first time period to reserve third resources at the first bandwidth for transmitting the data between the third and fourth interfaces at the first bandwidth, and

be responsive to the second path setup message during the second time period to reserve virtually concatenated fourth resources at the second bandwidth for transmitting the data between the first and second interfaces at the second bandwidth; and

at least one network coupling the network management system, first switching circuit and second switching circuit,

wherein said connection modify command is formed by said network management system without determining usage statistics for all of said switching circuits in said SONET communication network.

2. (Original) A system, as claimed in claim 1, wherein the first and second switching circuits each comprise an add/drop multiplexer.

3. (Original) A system, as claimed in claim 1, wherein the first switching circuit comprises an add/drop multiplexer and wherein the second switching circuit comprises a digital cross-connect switch.

4. (Original) A system, as claimed in claim 1, wherein said at least one network comprises one or more of a SONET network, an SDH network and a WDM network.

5. (Original) A system, as claimed in claim 1, wherein the signal protocol is carried in one or more of a SONET DCC, SONET/SDH overhead bytes, an optical supervisory channel, and an out-of-band network.

6. (Original) A system, as claimed in claim 1, wherein the signal protocol comprises a fast signaling protocol.

7. (Original) A system, as claimed in claim 1, wherein the signal protocol comprises at least one of SS7, PNNI, RSVP-TE, and CR-LDP.

8. (Original) A system, as claimed in claim 1, wherein second switching circuit is responsive to the first path setup message to transmit a first acknowledge message and is

responsive to the second path setup message to transmit a second acknowledge message, and

wherein the first switching circuit is responsive to the first acknowledge message to complete a first connection between first and second interfaces using the first resources and is responsive to the second acknowledge message to complete a second connection between the first and second interfaces using the second resources, the first and the second connections being combined as a virtually concatenated connection.

9. (Original) A system, as claimed in claim 8, wherein the first switching circuit transmits a first connection update complete signal to the network management system in response to the completion of the first connection using the first resources and transmits a second connection complete signal to the network management system in response to the completion of the second connection using the second resources.

10. (Original) A system, as claimed in claim 1, wherein the first resources comprise a predetermined VT data structure and the second resources comprise a multiple of the predetermined VT data structure.

11. (Original) A system, as claimed in claim 1, wherein the first resources comprise a predetermined STS data structure and the second resources comprise a multiple of the predetermined STS data structure.

12. (Original) A system, as claimed in claim 1, wherein the first and second switching circuits comprise buffers and wherein the first and second switching circuits reserve at least some of the buffers so that differential delays in the processing of the data are accommodated.

13. (Original) A system, as claimed in claim 1, wherein the first switching circuit transmits control information indicating a group ID and a group position for the data transmitted using the second resources.

14. (Previously Presented) In a data communication system comprising a first switching circuit and also comprising a second switching circuit, a method for changing the bandwidth of a circuit switched connection between the first and second switching circuits without taking down the connection comprising:

issuing a connection create request effective during a first time period and a connection modify command effective during a second time period;

responding to the connection create request during the first time period to reserve first resources at a first bandwidth for transmitting the data across the first switching circuit at the first bandwidth and to launch a first path setup message using a signaling protocol;

responding to the connection modify command during the second time period to reserve virtually concatenated second resources at a second bandwidth greater than the first bandwidth for transmitting the data across the first switching circuit at the second bandwidth and to launch a second path setup message using the signaling protocol;

responding to the first path setup message during the first time period to reserve third resources at the first bandwidth for transmitting the data across the second switching circuit at the first bandwidth;

responding to the second path setup message during the second time period to reserve virtually concatenated fourth resources at the second bandwidth for transmitting the data across the second switching circuit at the second bandwidth; and

coupling the first and second switching circuits,

wherein said first switching circuit and said second switching circuit are included in a SONET communication network having at least three switching circuits, and

wherein said connection modify command is formed by said network management system in communication with said SONET communication network without determining usage statistics for all of said switching circuits in said SONET communication network.

15. (Original) A method, as claimed in claim 14, wherein the first and second switching circuits each comprise an add/drop multiplexer.

16. (Original) A method, as claimed in claim 14, wherein the first switching circuit comprises an add/drop multiplexer and wherein the second switching circuit comprises a digital cross-connect switch.

17. (Original) A method, as claimed in claim 14, wherein the system comprises one or more of a SONET network, an SDH network and a WDM network and wherein the coupling comprises coupling the first and second switching circuits with one or more of the SONET network, the SDH network and the WDM network.

18. (Original) A method, as claimed in claim 17, wherein the signal protocol is carried in one or more of a SONET DCC, SONET/SDH overhead bytes, an optical supervisory channel, and an out-of-band network.

19. (Original) A method, as claimed in claim 14, wherein the signal protocol comprises a fast signaling protocol.

20. (Original) A method, as claimed in claim 14, wherein the signal protocol comprises at least one of SS7, PNNI, RSVP-TE, and CR-LDP.

21. (Original) A method, as claimed in claim 14, wherein second switching circuit is responsive to the first path setup message to transmit a first acknowledge message and is

responsive to the second path setup message to transmit a second acknowledge message, and

wherein the first switching circuit is responsive to the first acknowledge message to complete a first connection across the first switching circuit using the first resources and is responsive to the second acknowledge message to complete a second connection across the first switching circuit using the second resources.

22. (Original) A method, as claimed in claim 21, and further comprising transmitting a first connection complete signal in response to the completion of the first connection using the first resources and transmitting a second connection complete signal in response to the completion of the second connection using the second resources.

23. (Original) A method, as claimed in claim 14, wherein the first resources comprise a predetermined VT data structure and the second resources comprise a multiple of the predetermined VT data structure.

24. (Original) A method, as claimed in claim 14, wherein the first resources comprise a predetermined STS data structure and the second resources comprise a multiple of the predetermined STS data structure.

25. (Original) A method, as claimed in claim 14, and further comprising buffering at least some of the data so that differential delays in the processing of the data are accommodated.

26. (Original) A method, as claimed in claim 14, and further comprising transmitting control information indicating a group ID and a group position for the data transmitted using the second resources.

27. (Previously Presented) A method of controlling communication resources in a SONET communication network, said method including:

forming a SONET communication network having a set of add/drop multiplexers including a first add/drop multiplexer, a second add/drop multiplexer and a plurality of additional add/drop multiplexers;

forming a virtual tributary communication connection between said first add/drop multiplexer and said second add/drop multiplexer in response to a command from a network management system; and

modifying said virtual tributary communication connection to become a virtually concatenated virtual tributary communication connection in response to a command from said network management system,

wherein said modifying said virtual tributary communication connection to become a virtually concatenated virtual tributary communication connection occurs

without determining usage statistics for all of said set of add/drop multiplexers in said SONET communication network.

28. (Previously Presented) A method of controlling communication resources in a SONET communication network, said method including:

forming a SONET communication network having a set of add/drop multiplexers including a first add/drop multiplexer, a second add/drop multiplexer and a plurality of additional add/drop multiplexers;

forming a virtual tributary communication connection between said first add/drop multiplexer and said second add/drop multiplexer in response to a command from a network management system; and

modifying said virtual tributary communication connection to become a virtually concatenated virtual tributary communication connection in response to a command from said network management system,

wherein said modifying said virtual tributary communication connection to become a virtually concatenated virtual tributary communication connection is not based on a determination of usage statistics for all of said set of add/drop multiplexers in said SONET communication network.

29. (Canceled)

30. (Previously Presented) A method of controlling communication resources between a pair of Add/drop multiplexers in a SONET communication network, said method including:

providing a SONET ring having a set of at least three add/drop multiplexers;

forming a virtually concatenated virtual tributary communication connection between a first add/drop multiplexer and a second add/drop multiplexer in response to a command from a network management system and without determining usage statistics for all add/drop multiplexers in said set of add/drop multiplexers.

31. (Previously Presented) A method of controlling communication resources between a pair of Add/drop multiplexers in a SONET communication network, said method including:

providing a SONET ring having a set of at least three add/drop multiplexers;

forming a virtually concatenated virtual tributary communication connection between a first add/drop multiplexer and a second add/drop multiplexer in response to a command from a network management system and without determining usage statistics for add/drop multiplexers other than said first add/drop multiplexer and said second add/drop multiplexer.

Please add the following new claims:

32. (New) A communication system including:

a network management system;

a digital cross-connect in communication with the network management system; and

a synchronous optical network including a first add/drop multiplexer and a second add/drop multiplexer, the synchronous optical network in communication with the digital cross-connect,

wherein the network management system uses the digital cross-connect to initiate a connection create command at the first add/drop multiplexer;

wherein the first add/drop multiplexer reserves resources for the connection in response to the connection create command,

wherein the digital cross-connect then transmits a path setup message to the second add/drop multiplexer using the synchronous optical network to establish a path between the first add/drop multiplexer and the second add/drop multiplexer.

33. (New) The system of claim 32 wherein the connection create command establishes a virtual tributary connection.

34. (New) The system of claim 32 wherein digital cross-connect launches the path setup message to the second add-drop multiplexer

35. (New) The system of claim 32 wherein the second add/drop multiplexer sends a path acknowledge to the digital cross-connect once the second add/drop multiplexer has reserved resources for the connection specified by the path setup message.

36. (New) The system of claim 35 wherein the path acknowledge is received by the digital cross-connect and the digital cross-connect then reserves resources for the connection specified by the path setup message.

37. (New) The system of claim 36 wherein the digital cross-connect then forward the path acknowledge to the first add/drop multiplexer and the first add/drop multiplexer then completes the connection.

38. (New) The system of claim 37 wherein the first add/drop multiplexer send a connection complete response to the digital cross-connect once the connection has been completed.